

(12) INTERNATIONAL PUBLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

**(19) World Intellectual Property
Organization
International Bureau**



(43) International Publication Date
15 July 2004 (15.07.2004)

PCT

(10) International Publication Number
WO 2004/059913 A3

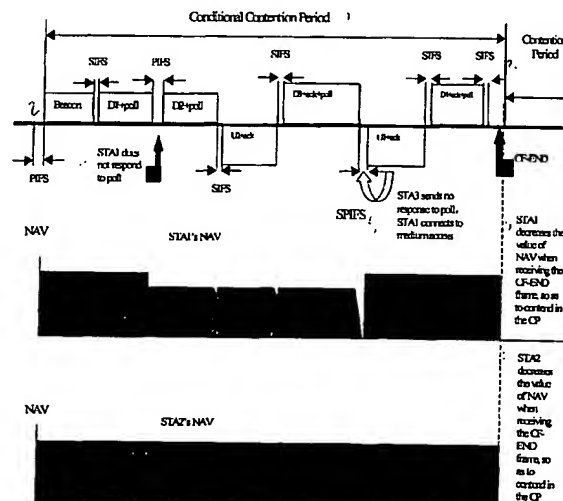
- (51) International Patent Classification⁷: **H04L 12/28**
- (21) International Application Number: **PCT/TB2003/006093**
- (22) International Filing Date:
15 December 2003 (15.12.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
02159786.3 26 December 2002 (26.12.2002) CN
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- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Declaration under Rule 4.17:**
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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[Continued on next page]

- (54) Title:** EFFECTIVE POINT COORDINATION FUNCTION IN WIRELESS LAN



- (57) Abstract:** This invention provides a system and method for enhancing point coordination function PCF in wireless LANs. A contention procedure is introduced into PCF in this invention. When the point coordinator (PC) polls the mobile terminal who has no frame to send, the terminal does not respond to the CF-Poll from PC, and will adjust its NAV (Network Allocation Vector) and set it to a special value that is defined as SPIFS (S-PCF Interframe Space). When data is ready on this mobile terminal when it is still in the same Contention Free Period CFP and its poll period is over, the terminal can contend for accessing the medium. If it detects the medium to be idle for SPIFS period during the CFP (Contention Free Period), then the mobile terminal gains the control of medium and starts to send the ready data. So this mobile terminal can have another opportunity to gain the control of medium during this CFP instead of next CFP, and this can decrease the transmission delay.

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Published:

— with international search report

(88) Date of publication of the international search report:
11 November 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04L12/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, COMPENDEX, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 2002/122409 A1 (KANDALA SRINIVAS) 5 September 2002 (2002-09-05) abstract paragraphs 7-24; paragraphs 62-86; figures 2A,2B,4,5,6A,6B --- -/--	1,2, 16-18,31 3-15, 19-30

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

25 June 2004

Date of mailing of the international search report

27/07/2004

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INTERNATIONAL SEARCH REPORT

International Application No.

/IB 03/06093

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	"Information technology-Telecommunications and information exchange between systems-Local and metropolitan area networks-Specific requirements. Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications. Chapter 9"	3-7, 10-15, 19-23, 26-30
A	ISO/IEC 8802-11 ANSI/IEEE STD 802.11, XX, XX, 1999, pages 70-97, XP002236335	
	paragraphs 9.2.3; 9.2.3.1-9.2.3.4; 9.2.4; 9.2.5.2; 9.2.10; 9.3; 9.3.1-9.3.4	1,2,8,9, 16-18, 24,25,31
Y	WO 96/35273 A (MOTOROLA INC) 7 November 1996 (1996-11-07)	8,9,24, 25
A	page 11, line 19 -page 12, line 20 page 13, line 6 -page 14, line 31 page 18, line 19 -page 20, line 11 page 26, line 7 -page 27, line 8 figures 2,5-8	1-7, 10-23, 26-31
A	EP 1 233 574 A (TEXAS INSTRUMENTS INC) 21 August 2002 (2002-08-21)	1,8,9, 13,16, 17,24, 25,28,31
	abstract column 1, line 5 -column 2, line 55 column 4, line 19 -column 10, line 48 column 11, line 44 - line 57	
A	STINE J A ET AL: "Tactical communications using the IEEE 802.11 MAC protocol" MILITARY COMMUNICATIONS CONFERENCE, 1998. MILCOM 98. PROCEEDINGS., IEEE BOSTON, MA, USA 18-21 OCT. 1998, NEW YORK, NY, USA,IEEE, US, 18 October 1998 (1998-10-18), pages 575-582, XP010307881 ISBN: 0-7803-4506-1 paragraphs 3.2-3-8; 4.3; 6.7	1,4-6, 16,17, 20-22,31
P,A	WO 03/039035 A (AT & T CORP) 8 May 2003 (2003-05-08) abstract page 4, line 12 -page 7, line 12	1,8-17, 24-31

INTERNATIONAL SEARCH REPORT

International Application No

IB 03/06093

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2002122409	A1	05-09-2002	NONE	
WO 9635273	A	07-11-1996	US 6006017 A AU 688217 B2 AU 5540496 A CA 2219526 A1 CN 1186578 A EP 0861548 A1 WO 9635273 A1	21-12-1999 05-03-1998 21-11-1996 07-11-1996 01-07-1998 02-09-1998 07-11-1996
EP 1233574	A	21-08-2002	US 2002071449 A1 EP 1233574 A2 JP 2002314551 A	13-06-2002 21-08-2002 25-10-2002
WO 03039035	A	08-05-2003	US 2003161340 A1 WO 03039035 A2	28-08-2003 08-05-2003